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DESCRIPTION  
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## TELEVISION BROADCAST SIGNAL RECEIVING APPARATUS

### TECHNICAL FIELD

The present invention relates to a disc recorder in which it is made possible to record by reservation a television broadcast signal superimposed with a broadcast start time as teletext data (VPS (Video Programme System)/PDC (Programme Delivery Control) signal).

### BACKGROUND ART

In the past, centering on Europe, a disc recorder has been proposed in which it is made possible to record by reservation a television broadcast signal superimposed with a broadcast start time as teletext data (VPS/PDC signal).

The VPS/PDC signal which is broadcast start time information is superimposed in every field of a television broadcast signal and even if the recording reserved program is shifted for its broadcast start time depending on some sort of causes such as a special newscast, it is possible to record an aimed program when recording by reservation using this VPS/PDC signal, because the recording is carried out in dependence upon the broadcast start time of this VPS/PDC signal.

### DISCLOSURE OF THE INVENTION

However, in a case when a recording reservation is carried out by using the VPS/PDC signal for a disc recorder of a single tuner in which only one television tuner is contained, the VPS/PDC signal is detected by selecting an object channel for the reservation

recording, for example, channel 6 within the time window at every predetermined time (hereinafter, named as channel scan) and it is judged whether or not the execution of the recording is possible.

In a case when a reservation, for example, starting from 0:00 until 3:59 on March 24 is registered as a recording reservation, it is constituted such that the time window is set from 20:00 on March 23 until 4:00 on March 25 and during that period, the channel selection of the reservation object channel (channel scan) is to be carried out.

Also, in a case when a reservation, for example, starting from 4:00 until 23:59 on March 24 is registered as a recording reservation, it is constituted such that the time window is set from 0:00 on March 24 until 4:00 on March 25 and during that period, the channel scan is to be carried out.

Consequently, there was an inconvenience in a disc recorder of a single tuner in the past that it is not possible to view the television broadcast during the time window period when there is set a recording reservation using the VPS/PDC signal.

In view of such an aspect, the present invention is directed to make it possible to view a television broadcast program even within a time window after a recording reservation is registered by using the VPS/PDC signal.

The television broadcast receiving apparatus of the present invention is an apparatus in a television broadcast receiving apparatus which makes it possible to record by reservation a

television broadcast signal superimposed with a broadcast start time as teletext data (VPS/PDC signal), wherein a reservation recording using the VPS/PDC signal is registered and at the same time, channel scan off means for turning off the channel scan when the state is in a time window is provided.

Generally, a reservation recording using the VPS/PDC signal is registered and at the same time, a channel scan is carried out when the state is in the time window such that it is not possible to view a television broadcast program, but according to the present invention, there is provided channel scan off means for turning off the channel scan at that time, so that it is possible also at that time to view a television broadcast program of a desired channel in response to a user's demand.

#### BRIEF DESCRIPTION OF DRAWINGS

FIG. 1 is a constitutional diagram showing an exemplified embodiment of a television broadcast signal receiving apparatus according to the present invention;

FIG. 2 is a flowchart to be used for the explanation of the present invention; and

FIG. 3 is a flowchart to be used for the explanation of the present invention.

#### BEST MODE FOR CARRYING OUT THE INVENTION

Hereinafter, it will be explained with respect to best mode examples for carrying out the television broadcast receiving apparatus of the present invention with reference to FIGS. 1 to 3.

In FIG. 1, 1 designates television broadcast receiving means which makes it possible to receive a television broadcast signal and the television broadcast receiving means 1 has one tuner, that is, a single tuner constitution, and it is constituted such that a television broadcast signal superimposed with a broadcast start time as teletext data (VPS/PDC signal) which are used centering on Europe can be received.

The VPS/PDC signal which is broadcast start time information is superimposed in every field of a television broadcast signal and even if the recording reserved program of the television broadcast is shifted for its broadcast start time depending on some sort of causes such as a special newscast, it is possible to record an aimed program when recording by reservation using this VPS/PDC signal, because the recording is carried out in dependence upon the broadcast start time of this VPS/PDC signal.

It is constituted such that the television broadcast receiving means 1 can receive a desired channel by a key operation of a keyboard 2 (remote commander or the like is also available) and at the same time, such that a television broadcast signal of a desired channel received by the television receiving means 1 is to be supplied to a monitor 4 by way of a selector controller 3 which will be described later on, and it is constituted such that the received television broadcast signal can be viewed on the monitor 4.

In FIG. 1, 5 designates recording reservation control means and the recording reservation control means 5 consists of a

microcomputer or the like and includes a reservation table 5a, VPS/PDC-OFF recording reservation control means 5b and VPS/PDC-ON recording reservation control means 5c.

The reservation table 5a is constituted when a user carries out a recording reservation by using the keyboard such that the content of the recording reservation, for example, reservation time, information that the VPS/PDC signal is to be used (VPS/PDC-ON recording reservation), information that the VPS/PDC signal is not to be used (VPS/PDC-OFF recording reservation) or the like is to be registered therein.

The VPS/PDC-OFF recording reservation control means 5b is means for controlling the recording reservation which does not use the VPS/PDC signal, and it manages time from a timer 6 and supplies the television broadcast signal of the reserved channel, for example, channel 6 received by the television broadcast receiving means 1 to a disc player 7 by way of the selector controller 3 and the recording reservation control means 5 when it becomes the reserved time, and it is controlled in the disc player 7 such that the television broadcast signal is to be recorded on a disc thereof.

Also, the VPS/PDC-ON recording reservation control means 5c is means for controlling the recording reservation which uses the VPS/PDC signal. The VPS/PDC-ON recording reservation control means 5c determines a time window depending on a predetermined promise when a recording reservation using the VPS/PDC signal is carried out.

When, for example, a reservation starting from 0:00 until 3:59

on March 24 is registered on the reservation table 5a as the recording reservation using the VPS/PDC signal, the time window is from 20:00 on March 23 until 4:00 on March 25.

Also, when, for example, a reservation starting from 4:00 until 23:59 on March 24 is registered on the reservation table 5a as the recording reservation, the time window is from 0:00 on March 24 until 4:00 on March 25.

The VPS/PDC-ON recording reservation control means 5c carries out a channel selection of the reservation object channel, for example, channel 6 (channel scan) at every predetermined time within the time window period in the television broadcast receiving means, obtains the VPS/PDC signal superimposed in the television broadcast signal by way of the selector controller 3 and manages thereof, and when the VPS/PDC signal becomes the recording reservation time, it supplies the television broadcast signal of the reserved channel, for example, channel 6 received by the television broadcast receiving means 1 to the disc player 7 by way of the selector controller 3 and the recording reservation control means 5 and controls such that the television broadcast signal is to be recorded on a disc in the disc player 7.

According to the present invention, the VPS/PDC-ON recording reservation control means 5c transmits a display signal to the monitor 4 during a period in which the channel selection of the reservation object channel of the time window period (channel scan) is carried out and it is constituted such that a display of "Now is

in a channel scan. Please execute 'Scan Off' in order to watch a program." is to be displayed on the screen of the monitor 4.

Also, according to the present invention, a scan off 'Scan Off' key 2a is provided in the keyboard 2 such that when the scan off key 2a is operated, the selector controller 3 is controlled, the television broadcast signal received by the television broadcast receiving means 1 is supplied to the monitor 4 and the television broadcast signal can be viewed on the monitor 4. In this case, the television broadcast receiving means 1 can channel-select an arbitrary channel by the keyboard 2.

When the scan off key 2a is operated, the recording reservation control means 5 becomes a state for the VPS/PDC-OFF recording reservation which does not use the VPS/PDC signal.

In the example of FIG. 1, furthermore, reproduction of the disc player 7 can be controlled by the keyboard 2. When the disc player 7 is made to be a reproducing state, a reproduced signal from the disc player 7 is supplied to the monitor 4 through a reproducing means 8 and it is constituted such that the reproduced signal is to be viewed on the monitor 4. Others in the television broadcast signal receiving apparatus in the example of FIG. 1 are constituted similarly as those of a conventional apparatus.

Next, it will be explained with respect to the operation of the recording reservation of the television broadcast receiving apparatus in the example of FIG. 1 by using the flowcharts shown in FIG. 2 and FIG. 3.

When a recording reservation is carried out by the keyboard 2 (step S1), the content of the recording reservation is registered on the reservation table 5a of the recording reservation control means 5 (step S2).

Next, it is judged by the content of the recording reservation whether or not the VPS/PDC signal is to be used (step S3) and when it is a recording reservation which does not use the VPS/PDC signal, the timer 6 is managed by using the VPS/PDC-OFF recording reservation control means 5b such that the recording is carried out by the timer reservation (step S4).

When it is a recording reservation which uses the VPS/PDC signal, a time window corresponding to the reservation time is determined (step S5). Thereafter, the present time instant is obtained (step S6) and it is judged whether or not the present time instant is within the time window which was determined in step S5 (step S7).

When the present time instant is not within the time window, the disc recorder carries out a normal operation (step S8) and the flow repeats the operations of these steps S6, S7 and S8.

Next, when the present time instant enters into the time window, the VPS/PDC-ON recording reservation control means 5c carries out channel selection of the reservation object channel, for example, channel 6 (channel scan) at every predetermined time in the television broadcast receiving means 1 and carries out management by obtaining the VPS/PDC signal superimposed to the television



broadcast signal by way of the selector controller 3 (step S9).

When it became the channel scan mode (step S9), as shown in FIG. 3, the VPS/PDC-ON recording reservation control means 5c displays as "Now is in a channel scan. Please execute 'Scan Off' in order to watch a program." on the screen of the monitor 4 (step S10).

Next, it is judged whether or not the scan off key 2a was operated (step S11). When a user comes to wish a program viewing of a desired channel, for example, channel 8, the scan off key 2a is operated and at that time, it becomes a timer reservation by the VPS/PDC-OFF recording reservation control means 5b (step S12) and at the same time, it is constituted such that the television broadcast signal of the user's desired channel, for example, channel 8 from the television broadcast receiving means 1 is to be supplied to the monitor 4 through the selector controller 3 and it is possible to view the program of the user's desired channel (step S13).

When the scan off key 2a is not operated in step S11, it is judged whether or not the VPS/PDC signal became the reservation time (step S14) and when the VPS/PDC signal does not become the reservation time, the flow returns to step S10, and when the VPS/PDC signal became the reservation time, the reservation recording using the VPS/PDC signal is executed.

Generally, a reservation recording using the VPS/PDC signal is registered and at the same time, a channel scan is carried out when the state is in the time window such that it is not possible to view a television broadcast program, but according to the present

invention, there is provided a scan off key 2a for turning off the channel scan at that time and the channel scan is made to be turned off by the operation of the scan off key 2a, so that it is possible also at that time to view a television broadcast program of a desired channel in response to a user's demand.

It should be noted in the above mentioned examples that in case of being set to a scan off mode, the recording reservation control means 5 controls so as to carry out a recording just dependent on the time instant based on the timer 6, but this invention is not limited by this constitution and in case of being set to a scan off mode, it may be constituted such that only the VPS/PDC OFF reservation recording is to be executed without carrying out the VPS/PDC ON reservation.

Also, in the above mentioned examples, the scan off key 2a was provided as channel scan off means for turning off the channel scan, but it is needless to say that other device such as a switch or the like can be used instead thereof.

Also, in the time window for channel-scanning the VPS/PDC signal according to the above mentioned examples, the extraction of the VPS/PDC signal was stopped by operating a predetermined scan off key 2a, but this invention is not limited by such a process. For example, it may be constituted such that the channel scan is to be stopped automatically in a case when it becomes the above mentioned time window on an occasion when viewing a television broadcast signal for which a channel selection instruction is inputted by the user

(channel not multiplexed with VPS/PDC signal). In this regard, it may be constituted as a further preferable control such that warning information designating that the scan operation of the VPS/PDC signal is stopped is to be displayed.

Further, it may be constituted in the above mentioned time window such that the channel scan is stopped automatically in a case when a channel selection instruction of a channel which is not multiplexed with the VPS/PDC signal is inputted by a user and it may be constituted such that warning information designating that the scan operation of the VPS/PDC signal is stopped is to be displayed.

Also, it is needless to say that the present invention is not limited by the above mentioned examples and others various constitutions can be employed without departing from the scope of the present invention.